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HAMPTON ROADS TRANSIT

Draft Environmental Impact Statement VIRGINIA BEACH TRANSIT EXTENSION STUDY

Appendix P *Environmental Justice Technical Report*

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Table of Contents

1. Introduction and Summary.....	2
2. Legal and Regulatory Overview.....	2
3. Methods	4
3.1 Method for Identifying the Census Block Groups Evaluated for Each Alternative.....	5
3.2 Method for Identifying Minority Census Block Groups	5
3.3 Method for Identifying Low-Income Census Units.....	6
4. Description of Minority and Low-Income Populations in the VBTES Corridor	7
5. Discussion of Potential Effects to Minority and Low-Income Populations	22
6. Public and Agency Involvement.....	23
7. Environmental Justice Analysis	23
8. Conclusions	23
Appendix A – Study Area Census Block Groups	26
Figure 1. Census Block Groups and Alternative Alignments	10
Figure 2. Study Area Minority Populations.....	11
Figure 3. Persons at or Below 150% Federal Poverty Guidelines	12
Figure 4. Composite View - Minority and Low Income Census Block Groups.....	13
Figure 5. Alternative 1A - Minority Populations.....	14
Figure 6. Alternative 1A – Low-Income Populations	15
Figure 7. Alternative 1B - Minority Populations.....	16
Figure 8. Alternative 1B – Low-Income Populations	17
Figure 9. Alternative 2 – Minority Populations	18
Figure 10. Alternative 2 – Low-Income Populations	19
Figure 11. Alternative 3 – Minority Populations	20
Figure 12. Alternative 3 – Low-Income Populations	21

1. Introduction and Summary

This summary report describes the Virginia Beach Transit Extension Study (VBTES) project's compliance with Executive Order 12898 "Federal Actions to Address Environmental Justice in minority Populations and low-income Populations", U.S. Department of Transportation (DOT) Order 5610.2(a), and FTA Advisory Circular (AC) 4703.1, "Environmental Justice Policy Guidance for Federal Transit Administration Recipients." The purpose of this report is to evaluate the potential impacts of the VBTES project on minority and/or low-income populations related to implementation of the build alternatives considered.

This section describes the legal and regulatory context for considering environmental justice as part of capital infrastructure projects, the methods used to identify minority and/or low-income populations residing within the VBTES Corridor, and evaluates potential environmental issues as they pertain to environmental justice.

2. Legal and Regulatory Overview

Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires federal agencies to identify and address, as appropriate, any potential impacts of their capital programs, policies, or activities that may result in an adverse and/or disproportionately high impact borne by minority and/or low-income populations. This order provides, in part:

To the greatest extent practicable and permitted by law each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations [Subsection 1-101].

Each federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subject persons (including populations) to discriminations under such programs, policies, and activities, because of their race, color, or national origin [Subsection 2-2].

Each federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public [Subsection 5-5 {c}].

A Presidential Memorandum that accompanied Executive Order 12898 emphasized that the order was "intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment" (Weekly Compilation of Presidential Documents at 279, February 11, 1994). The Executive Order also underscored the application of certain provisions of existing law, such as NEPA, for the consideration of impacts to populations as the result of a federal action. Specifically, the memorandum notes that a NEPA

analysis must discuss “effects on minority communities and low-income communities,” and that mitigation measures “should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities” [Subsection 5-5 {c}].

In May 2012, the United States Department of Transportation (USDOT) issued Order 5610.2(a), defining the fundamental principals of environmental justice. Subsequently, in August 2012, the FTA issued AC 4703.1, “Environmental Justice Policy Guidance for Federal Transit Administration Recipients,” that outlines the steps for determining the presence of environmental justice communities and evaluating potential impacts to these communities as a result of a capital infrastructure project. The guiding principles of environmental justice followed by USDOT and the FTA are summarized as follows:

- Avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

USDOT Order 5610.2(a) requires the following:

- Identifying and evaluating environmental, public health, and interrelated social and economic effects of USDOT programs, policies, and activities;
- Proposing measures to avoid, minimize, and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects, and providing offsetting benefits and opportunities to enhance communities, neighborhoods, and individuals affected by USDOT programs, policies, and activities, where permitted by law and consistent with EO 12898;
- Considering alternatives to proposed programs, policies, and activities, where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts, consistent with EO 12898; and
- Eliciting public involvement opportunities and considering the results thereof, including soliciting input from affected minority and low-income populations in considering alternatives.

In compliance with the regulations previously referenced, the following sections describe the environmental justice analysis methods, potential impacts, and benefits of the proposed VBTES project. All actions that would be taken by FTA or Hampton Roads Transit with respect to this project would comply with applicable statutory requirements, the spirit of this Executive Order, and applicable administrative regulations including joint FHWA/FTA regulations on Statewide Planning published October 28, 1993 [23 C.F.R. § 450 and 49 C.F.R. § 613], USDOT Order 5610.2(a), and AC 4703.1.

3. Methods

The following section discusses the methods used to identify minority and/or low-income populations residing within the VBTES Corridor, and within proximity to the three build alternatives considered. Potential effects of the project to minority and/or low-income populations were only evaluated for the build alternatives, as the no build alternative would not alter the existing conditions of the surrounding environment. The identification and analysis of minority and low-income populations used U.S. Census Bureau data to quantify population characteristics, but also incorporates a qualitative discussion of potential effects to surrounding communities and environmental resources with respect to minority and low-income populations. The method for analyzing the effects of the proposed project on environmental justice populations consists of the following steps:

- Define the unit of geographic analysis impacted by the proposed project. The boundaries of the geographic unit should be large enough to include the area likely to experience adverse effects, but not so large as to artificially dilute the minority and/or low-income population;
- In order to compare and evaluate potential effects to minority and/or low-income populations residing within the VBTES Corridor, a Region of Comparison (ROC) was established. For this project, the City of Virginia Beach was selected as the ROC.
- Gather the relevant demographic data from a reliable source such as the U.S. Census Bureau at the Census block group geographic level;
- Analyze the severity of impacts associated with the project alternatives;
- Identify appropriate mitigation strategies to avoid or minimize identified impacts;
- Identify the project benefits; and
- Determine and disclose disproportionately high or adverse impacts (if any).

The presence of minority and/or low-income populations within the project corridor was based on the 2010 U.S. decennial Census, along with data obtained from the 2007–2011 American Community Survey (ACS).

3.1 Method for Identifying the Census Block Groups Evaluated for Each Alternative

The identification of minority and low-income populations within the VBTES Corridor was conducted through an analysis of Census block groups within a one-half mile radius of each build alternative using the following method:

- A one half-mile radial buffer was created using Geographic Information Systems (GIS) software around each proposed build alternative alignment for the three alternatives considered. The alternatives included the following:
 - Alternative 1A – Town Center
 - Alternative 1B – Rosemont Alternative
 - Alternative 2 – NSRR Alternative
 - Alternative 3 – Hilltop Alternative
- All Census block groups that intersected the one-half mile buffer of each build alternative were selected for analysis.

3.2 Method for Identifying Minority Census Block Groups

Advisory Circular 4703.1 defines a “minority person” as any of the following:

1. American Indian and Alaskan Native, which refers to people having origins in any of the original peoples of North and South America (including Central America), and who maintain tribal affiliation or community attachment;
2. Asian, which refers to people having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
3. Black or African-American, which refers to peoples having origins in any of the Black racial groups of Africa;
4. Hispanic or Latino, which includes persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race, and
5. Native Hawaiian and Other Pacific Islander, which refers to people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

In accordance with the recommended guidelines outlined in AC 4703.1, the following process was used to identify those Census block groups in the VBTES Corridor that are populated by minorities:

- According to data obtained from the 2010 decennial Census, the minority population percentage for the City of Virginia Beach was 35.5 percent.

- The minority population percentage for each Census block group within the VBTES Corridor was calculated with the obtained Census data. If the minority population percentage of a Census block group was equal to or greater than the City of Virginia Beach percentage (35.5 percent), that Census block group was identified as a minority Census block group.

A minority population is defined as “any readily identifiable group of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient populations (such as migrant workers or Native Americans) who will be similarly affected by a proposed USDOT program, policy, or activity.”

3.3 Method for Identifying Low-Income Census Units

In accordance with AC 4703.1, and pursuant to the definition of low-income populations contained in Public Law 121-141, *Moving Ahead for Progress in the 21st Century* (MAP-21), low-income populations are defined as persons or a group of people and/or community with household incomes at or below 150 percent of the U.S. Department of Health and Human Services (HHS) poverty guidelines. The HHS specifies a variety of different poverty levels, and bases poverty thresholds with respect to average family size. For the purpose of this analysis, average household size was supplemented for average family size however the threshold for average family size was retained and used for this analysis. For calendar year 2013, the Federal Poverty Guidelines (FPG) for a single individual was \$11,490. At the 150 percent level, the FPG for a single individual was \$17,235. Table 1 outlines the FPG thresholds for family size relative to annual income for both 100 percent and 150 percent of the federal poverty level.

Table 1. 2013 Federal Poverty Guidelines

Size of Family ¹	100 percent Poverty Level	150 percent Poverty Level
1	\$11,490	\$17,235
2	\$15,510	\$23,265
3	\$19,530	\$29,295
4	\$23,550	\$35,325
5	\$27,570	\$41,355
6	\$31,590	\$47,385
7	\$35,610	\$53,415
8	\$39,630	\$59,445

Source: U.S. Department of Health and Human Services, 2013 Federal Poverty Guidelines

In place of previous methods used by the U.S. Census Bureau to collect information on population income levels, the American Community Survey (ACS), a revolving annual survey of the population that provides greater detail on changing demographic trends, is now used to estimate the number of people who are or may be impoverished based on the federal poverty guidelines. In order to identify the number of persons living at or below 150 percent of the FPG using ACS data, Census block group geographic level data on average household size and

average household income were collected for the study area.¹ The average household income is produced in a series of incremental income ranges. The data reflect the number of households at the various income ranges within each block group (e.g., 100 households with incomes between \$25,000 and \$30,000). Average household size was rounded to the nearest whole number (e.g., an average household size of 3.2 persons per household was rounded down to 3).² Using the FPG guidelines for family size provided by HHS, the number of households within each applicable income range were summed for each block group. For example, a family of 3 at or below 150 percent of the federal poverty level had a household income of no more than \$29,295 in 2013. Therefore, using the rounded average household size for each block group, the number of households were summed for each income range up to the 2013 FPG for household size. To determine the percent of households at or below 150 percent of the FPG, the number of households determined in the previous step were divided by the total number of households within the block group, and multiplied by 100 (yielding the percentage of households within the block group at or below 150 percent of the FPG). Finally, to determine the number of individuals at or below 150 percent of the FPG, the percentage of households determined in the previous step was multiplied by the average household size for each block group. A similar process was used to determine the percentage of the population for the City of Virginia Beach at or below 150 percent of the FPG.

4. Description of Minority and Low-Income Populations in the VBTES Corridor

Applying the methods discussed in Section 3, the analysis first determined the number of Census block groups that were either minority and/or low-income within the VBTES Corridor. A total of 69 Census block groups intersected a one-half mile buffer encircling the build alternatives. Appendix A to this report includes a table with the Census block groups used in the analysis of minority and low-income populations.

Table 2 displays the percentages of minorities and low-income populations residing within one half-mile of each build alternative. The percentage of minority and low-income populations differs by alternative because each alternative serves slightly different geographic areas. The minority and low-income population numbers and percentages for the City of Virginia Beach are provided for comparison purposes.

¹ According to the Census Bureau, the availability of ACS economic estimate data depends on the annual number of returned household surveys. Therefore, this analysis has used the most recently available economic data published by the ACS, currently 2007-2011 5-year estimate data.

² Average household sizes with 0.5 persons (e.g., 2.5 persons) were rounded up to the next whole number.

Table 2. Summary of Minority Population and Poverty Status by Alternative

Alternative	Number of Block Groups	2010 Decennial Census			2007-2011 ACS 5-Year Estimates		
		Total Population	Minority Population	Percentage Minority	Total Population ¹	Estimated Number of Persons in Poverty ²	Percent of Total Population
Alternative 1A	18	21,779	8,464	38.9%	21,769	735	3.4%
Alternative 1B	27	35,330	12,925	35.6%	34,984	1,117	3.2%
Alternative 2	61	80,532	28,780	35.7%	78,552	2,335	2.9%
Alternative 3	68	90,065	30,785	34.2%	87,625	2,614	2.9%
City of Virginia Beach	301	437,994	155,524	35.5%	426,118	55,174	12.9%

Sources: US Census Bureau, Census 2010 and 2007-2011 ACS 5-Year Estimates

¹ The ACS is a revolving sample survey of the population intended to provide information more current information on population trends and conditions. As estimate data, it is necessary to establish a base population estimate, which is different than the 100% count of the population conducted by the decennial Census. Therefore, the reported Total Population under the 2007-2011 ACS 5-Year Estimate column will be different than the 100% count total.

² The estimated number of persons in poverty reflects the number of individuals identified as being at or below 150% of the Federal Poverty Guidelines, according to the income tables provided by the U.S. Department of Health and Human Services.

As displayed in Table 2, the percentage of minority populations within one-half mile of Alternative 1 is slightly higher than the same percentages for both Alternatives 2 and 3 and the City of Virginia Beach in total. Similarly, the percentage of low-income populations residing within one-half mile of Alternative 1 was slightly higher than the number of low-income populations living within the same radial distance of Alternatives 2 and 3.

The study area contains a rich mixture of racial and ethnic groups, all of whom contribute to the unique character of the greater Norfolk-Virginia Beach metropolitan region. Race may be defined as a self-identification data item based on an individual's perception of his or her racial identity. Respondents to the 2010 Census selected the race(s) with which they most closely identified themselves. Ethnicity is defined as the classification of a population that share common characteristics such as religion, cultural traditions, language, tribal heritage, or national origin. In the 2010 Census, population by race and ethnicity data, the Hispanic/Latino population is included in the following seven racial categories: White, Black or African-American, American Indian and Alaskan Native, Asian, Native Hawaiian and other Pacific Islander, Some Other Race, or Two or More Races.

Table 3 provides an overview of the racial and ethnic composition of populations surrounding each build alternative. As displayed by the data, non-Hispanic White populations comprise the largest racial group within one-half mile of the build alternatives, followed by Black or African American populations.

Table 3. Race and Ethnicity by Build Alternative

Alternative	White (Non-Hispanic)	Black/African American	Native American	Asian	All Others ¹	Hispanic ²	Totals ³
Alternative 1A	13,315 (61.1%)	4,902 (22.5%)	103 (0.5%)	936 (4.3%)	812 (3.7%)	1,711 (8.1%)	21,779 (100%)
Alternative 1B	22,405 (63.4%)	7,324 (20.7%)	151 (0.4%)	1,377 (3.9%)	1,318 (3.7%)	2,755 (7.8%)	35,330 (100%)
Alternative 2	51,752 (64.3%)	16,392 (20.4%)	325 (0.4%)	2,598 (3.2%)	3,039 (3.8%)	6,426 (7.9%)	80,532 (100%)
Alternative 3	59,280 (65.8%)	17,349 (19.3%)	347 (0.4%)	2,810 (3.1%)	3,280 (3.6%)	6,999 (7.8%)	90,065 (100%)
City of Virginia Beach	282,470 (64.5%)	83,210 (18.9%)	1,349 (0.3%)	26,312 (6.0%)	15,666 (3.6%)	28,987 (6.6%)	437,994 (100%)

Source: U.S. Census Bureau, 2010

¹ The category “All Others” includes American Indian and Alaska Native, Native Hawaiian and other Pacific Islander, “some other race,” and persons who identified themselves as being of two or more races.

² By Census Bureau definition, the ethnic category “Hispanic or Latino” includes persons of any race.

³ Any discrepancies with percentages of the totals shown are due to rounding.

Thematic maps were developed to show the distribution of minority and low-income populations within a one-half mile of each build alternative. As described in Table 2 and 3, Alternative 2 has the highest proportion of minority and/or low-income populations residing within one-half mile of the alternative’s alignment, while Alternative 3 had a lower proportion of minority and/or low-income populations. The percentage of minority populations within block groups residing within one-half mile of each build alternative ranges from 3.8 to approximately 73.9 percent. The percentage of low-income populations (those within incomes at or below 150% of the FPG) residing within block groups within one-half mile of each build alternatives ranges from 0.0 to 55.2 percent.

Figures 1 through 3 illustrate the Census units within one-half mile of the build alternatives, and the distributions of minority and low-income. Figure 4 provides a spatial analysis of those Census units with percentages of both minority and low-income residents above the City of Virginia Beach percentages. Figures 5 through 8 display the minority and low-income Census block groups surrounding each build alternative specifically, along with the non-minority and non-low-income block groups.

Figure 1. Census Block Groups and Alternative Alignments

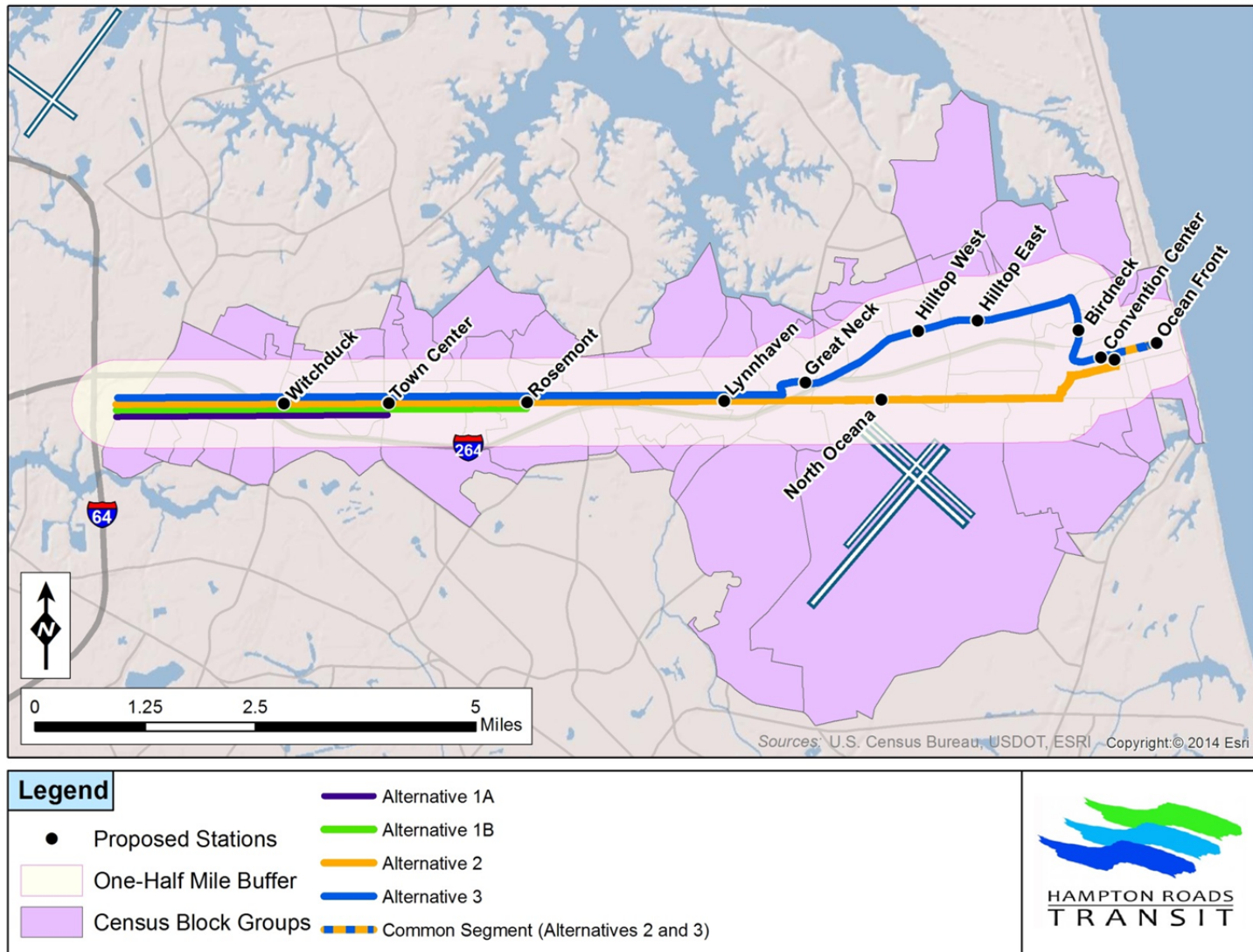


Figure 2. Study Area Minority Populations

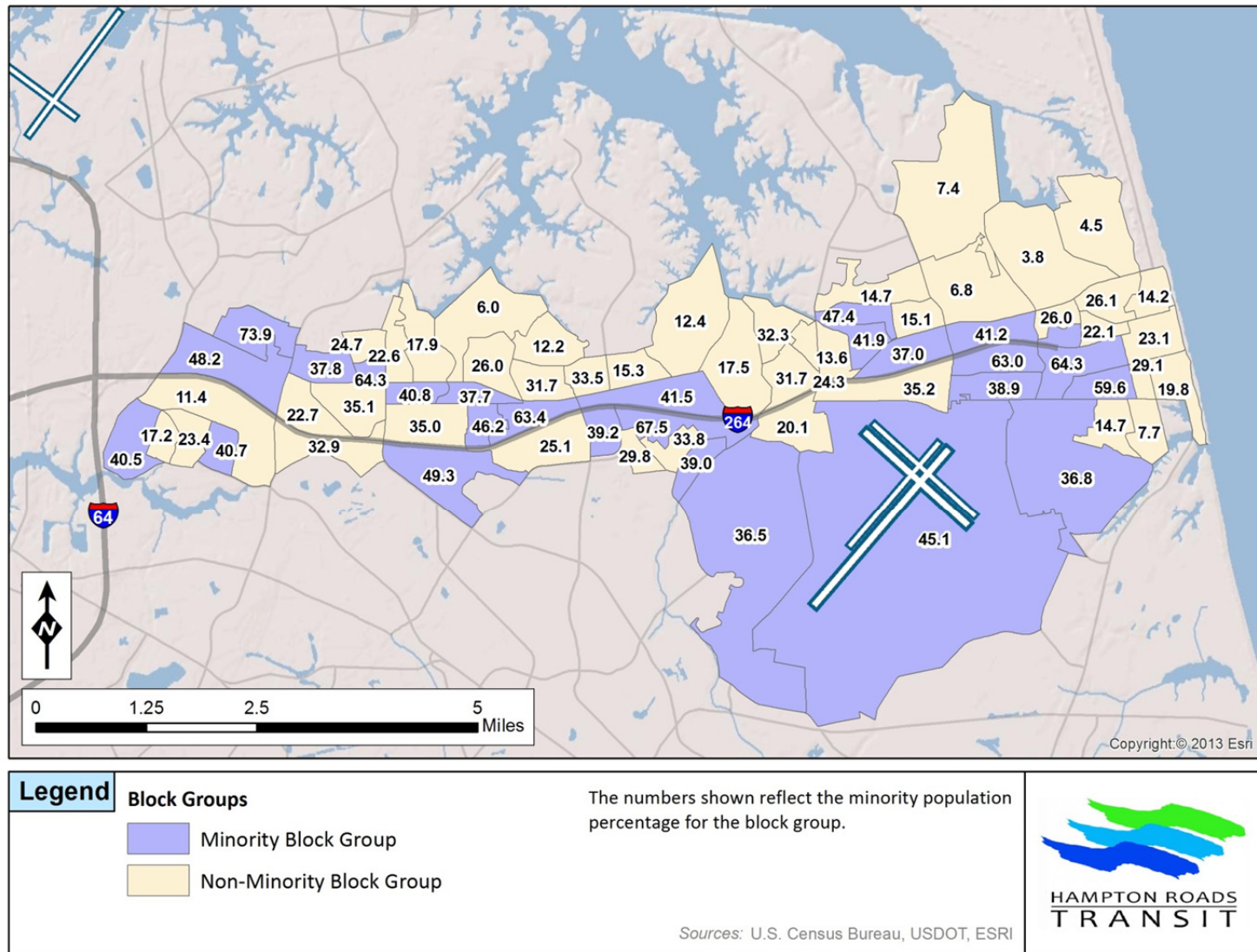


Figure 3. Persons at or Below 150% Federal Poverty Guidelines

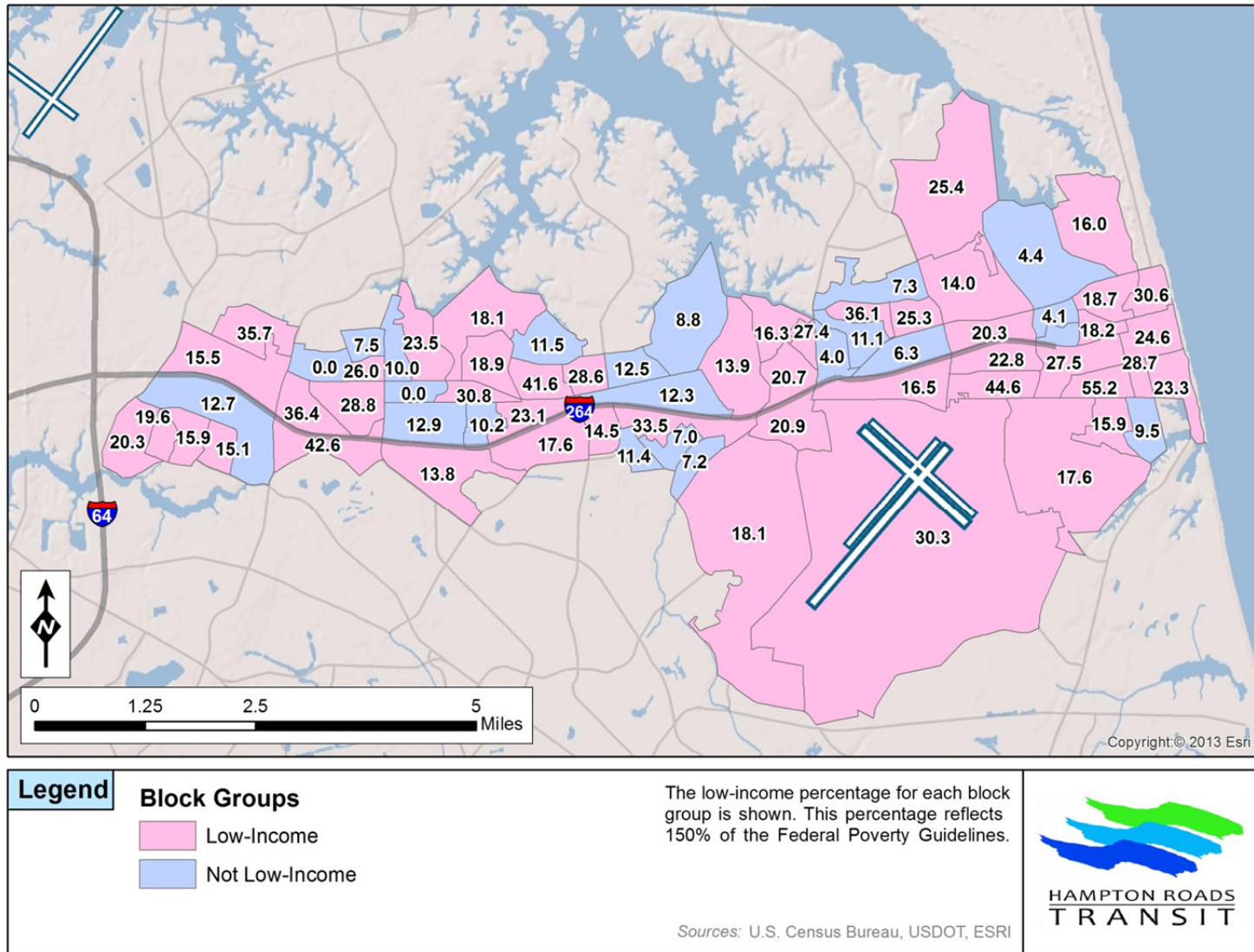


Figure 4. Composite View - Minority and Low Income Census Block Groups

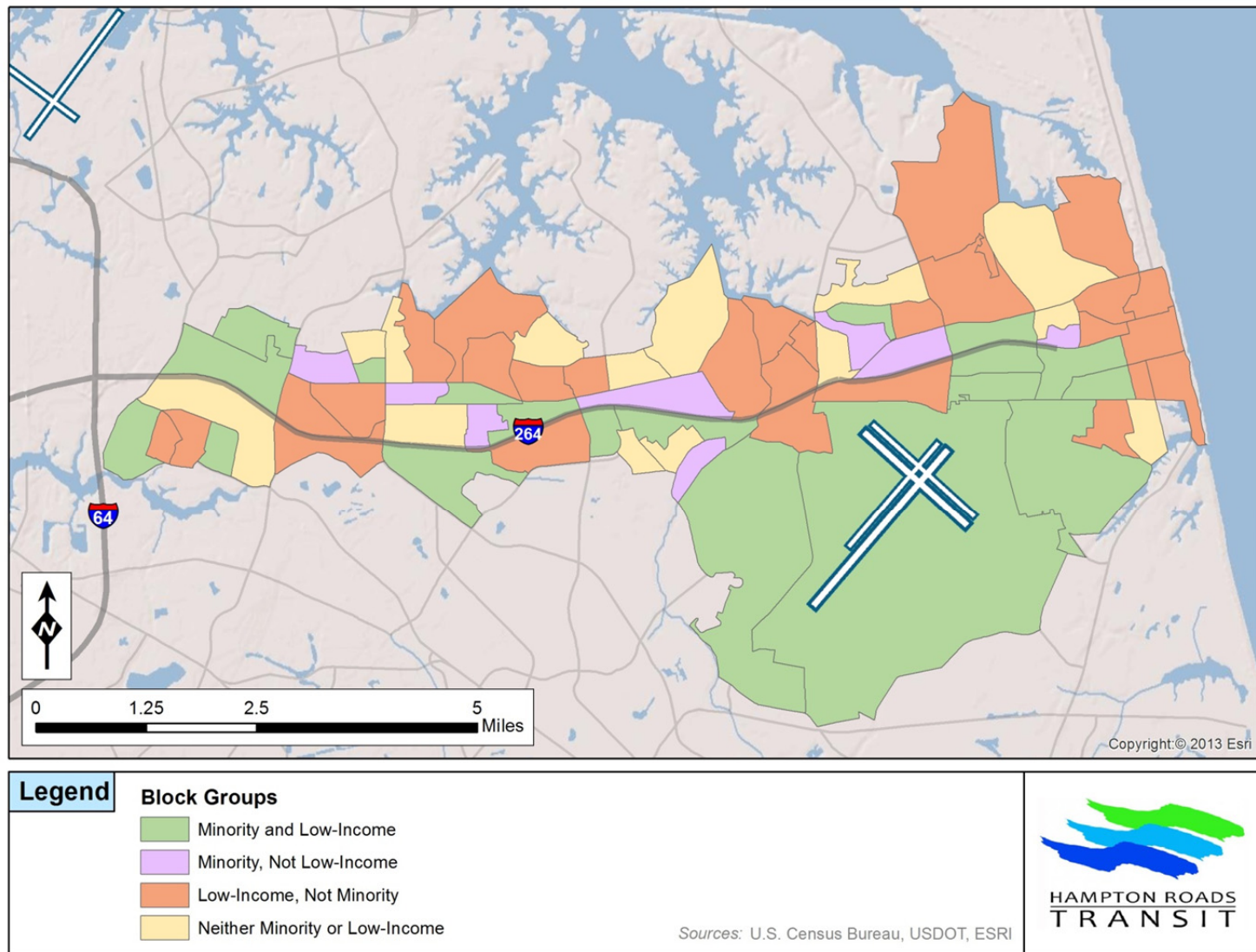


Figure 5. Alternative 1A - Minority Populations

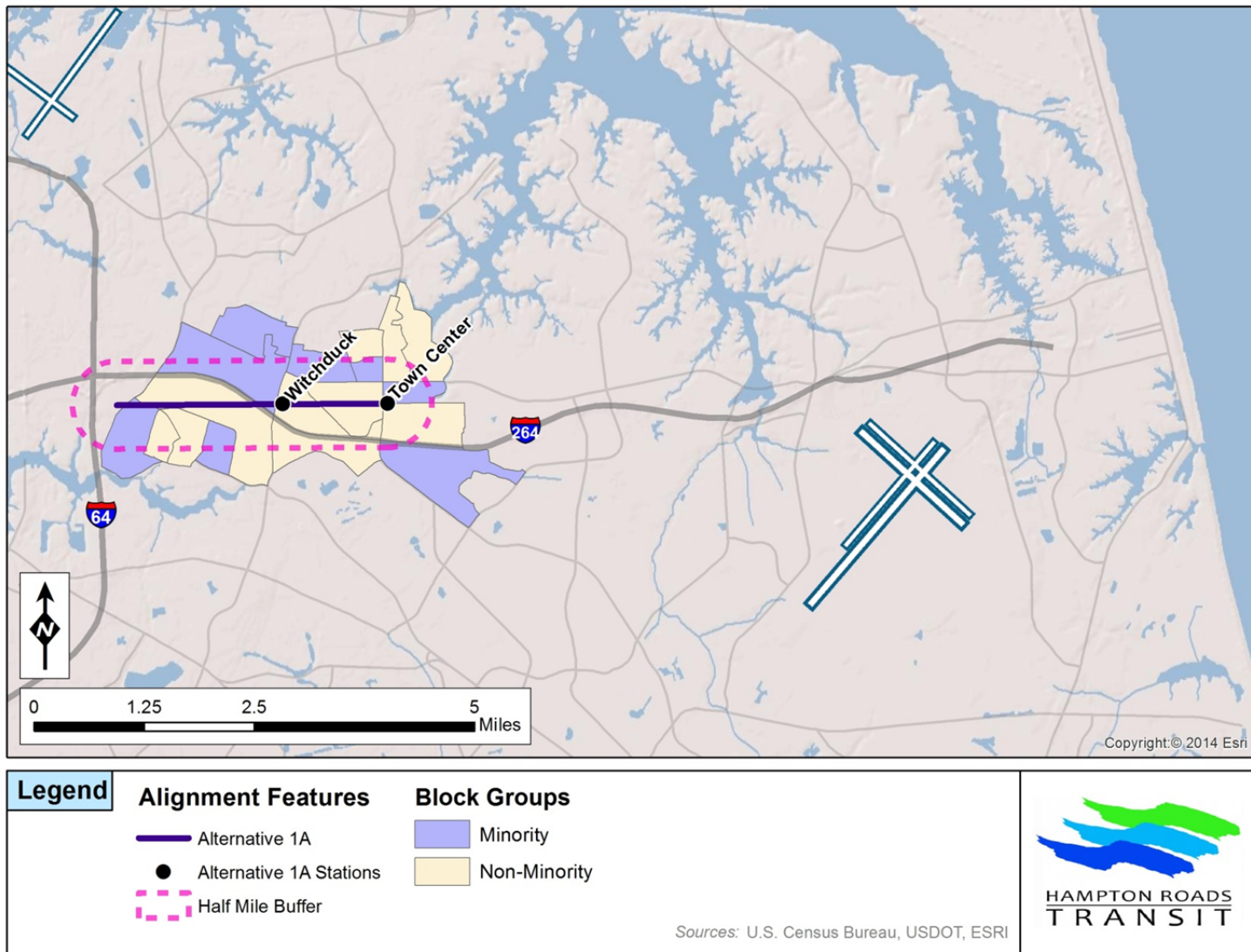


Figure 6. Alternative 1A – Low-Income Populations

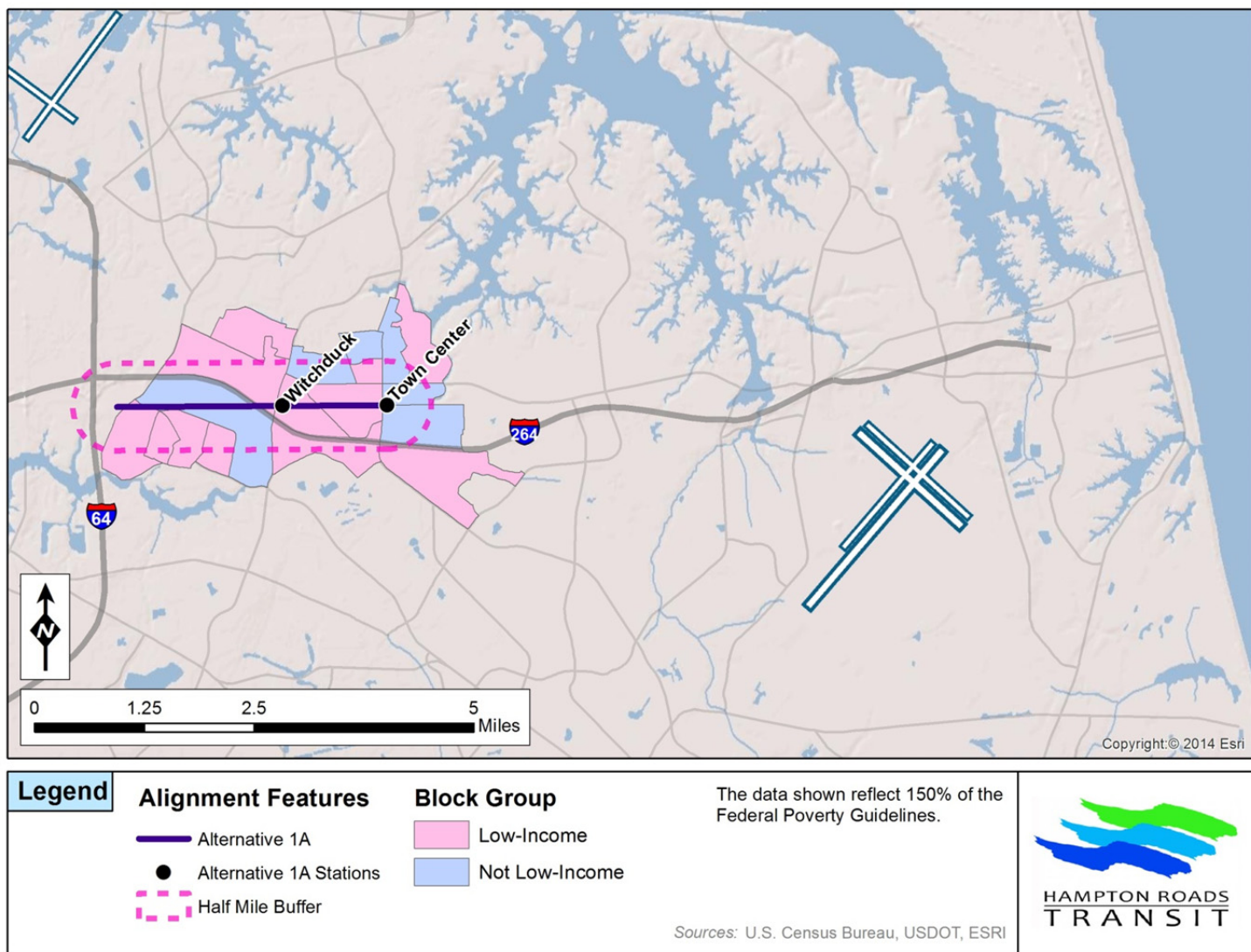


Figure 7. Alternative 1B - Minority Populations

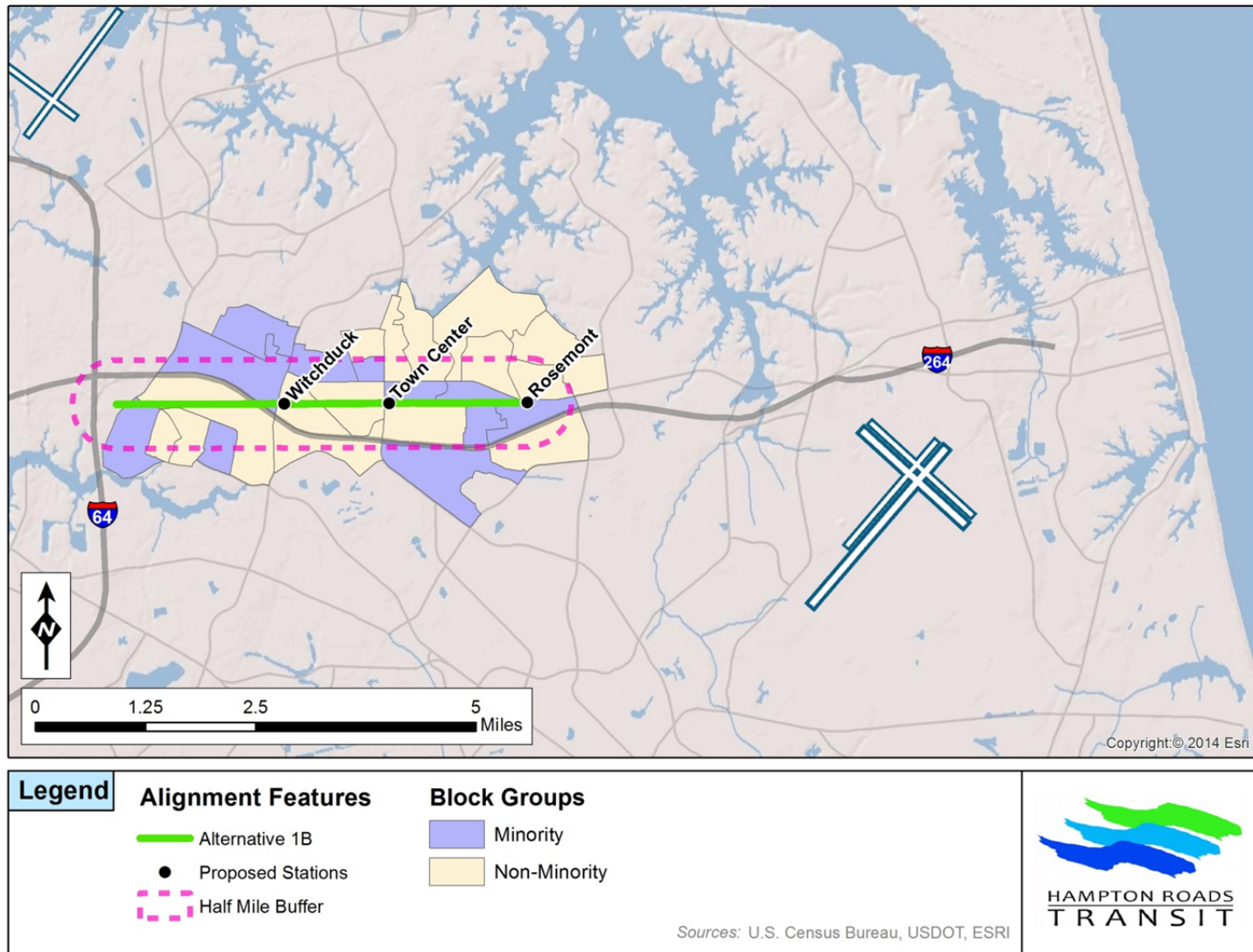


Figure 8. Alternative 1B – Low-Income Populations

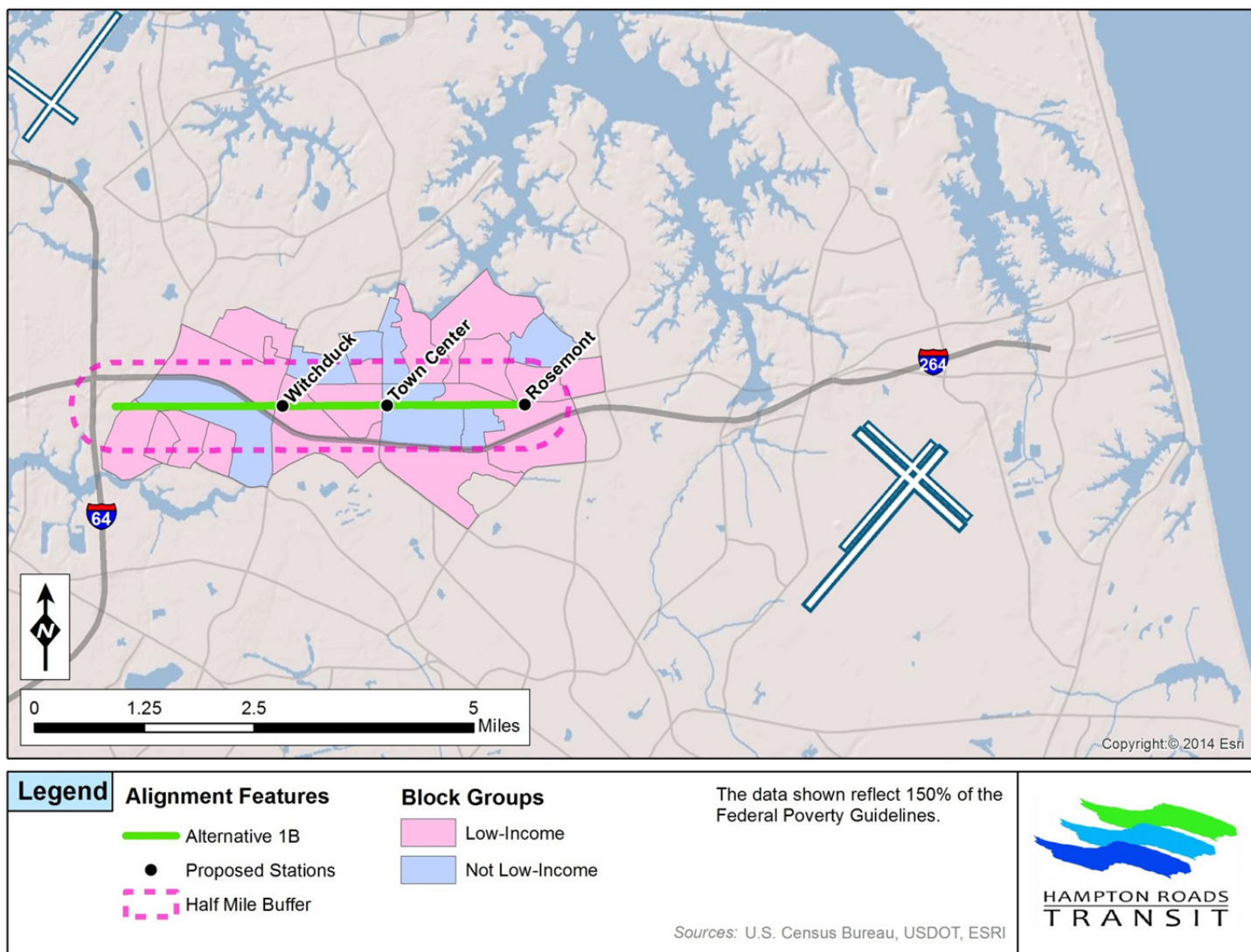


Figure 9. Alternative 2 – Minority Populations

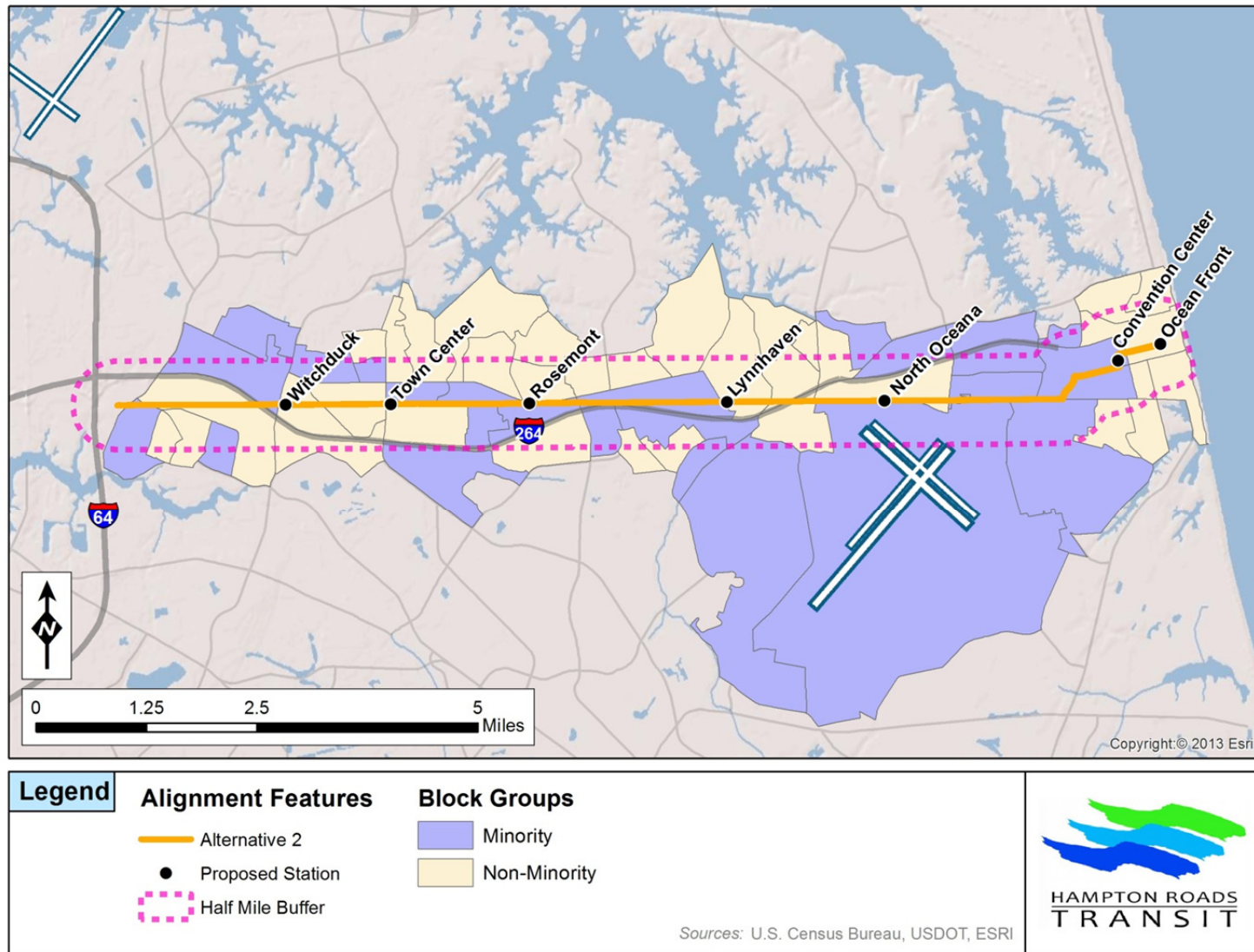


Figure 10. Alternative 2 – Low-Income Populations

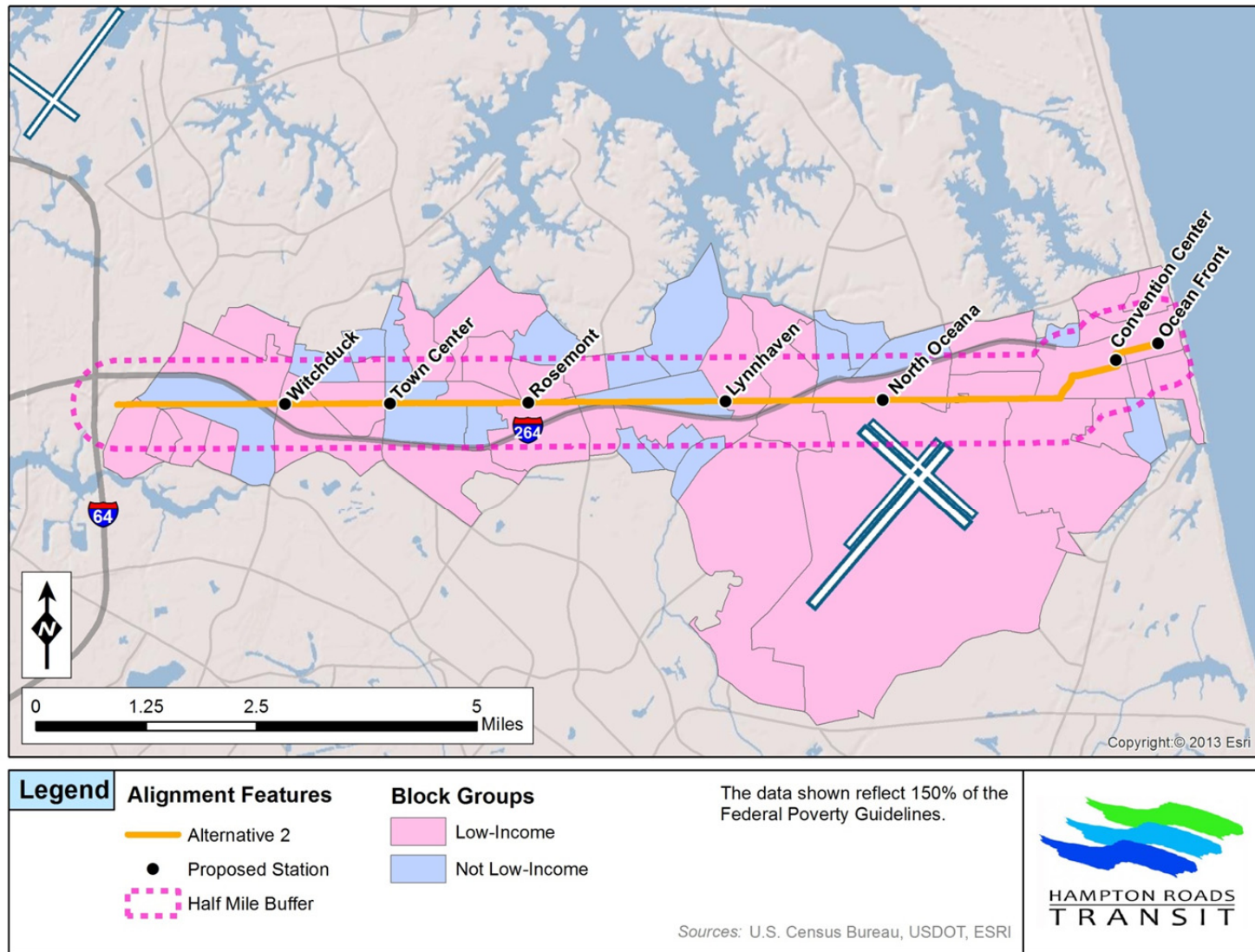


Figure 11. Alternative 3 – Minority Populations

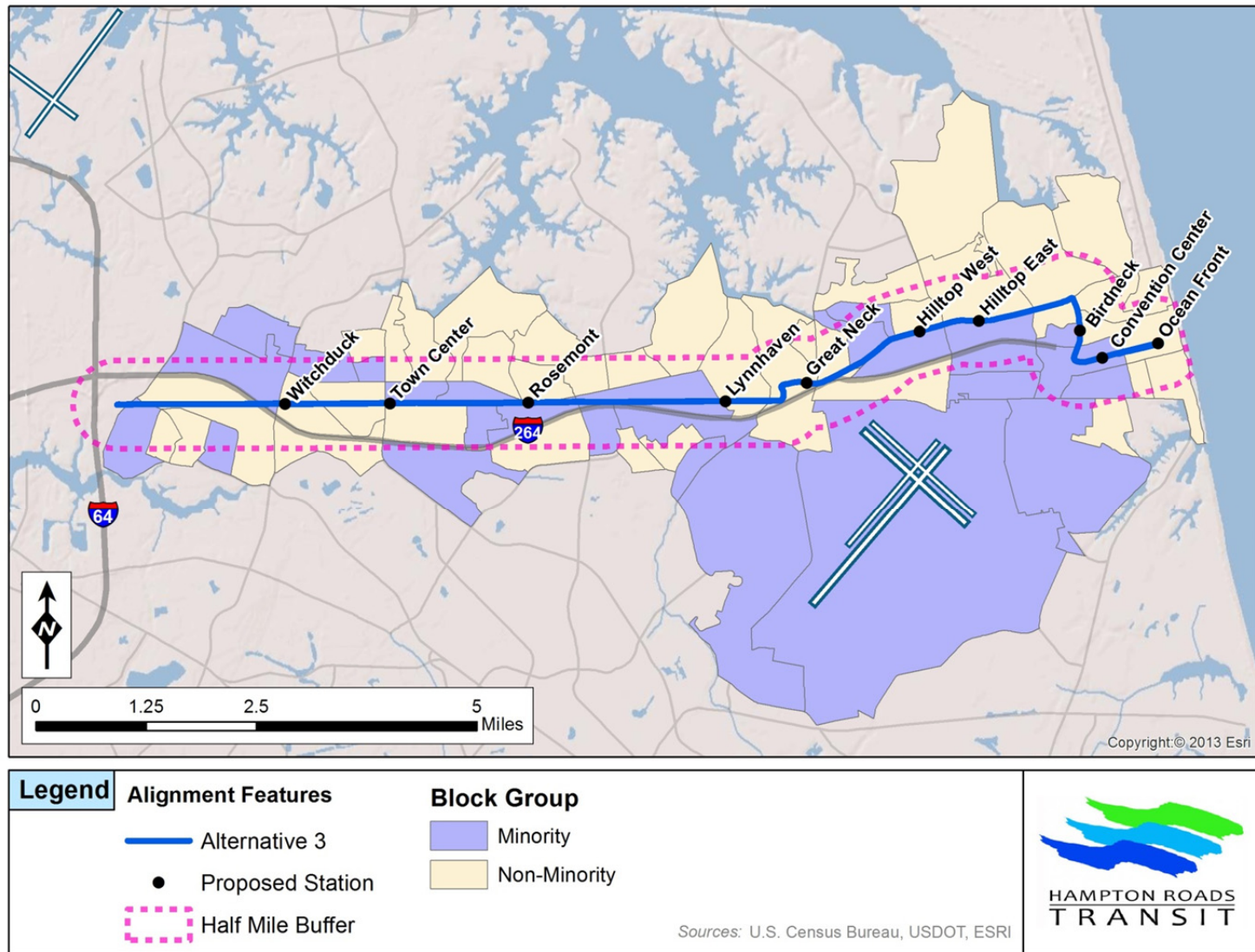
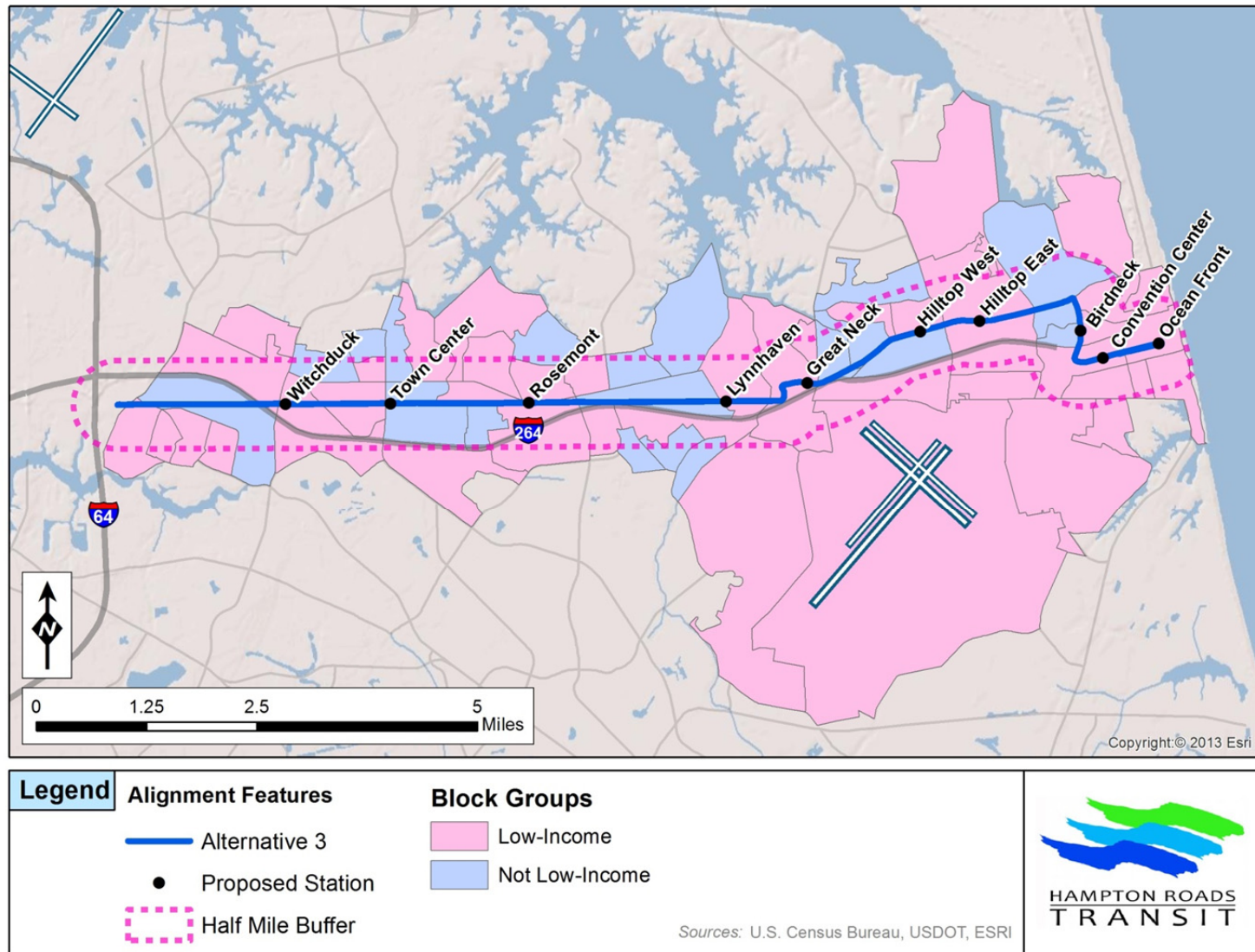


Figure 12. Alternative 3 – Low-Income Populations



5. Discussion of Potential Effects to Minority and Low-Income Populations

USDOT Order 5610.2(a) defines disproportionately high and adverse effects on minority and/or low-income populations as an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population, or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

The identification and avoidance of whether a project will have disproportionately high and adverse environmental effects on minority and low-income populations depends on a number of factors, including:

1. Identifying and evaluating environmental, public health, and interrelated social and economic benefits;
2. Proposing measures to avoid, minimize and/or mitigate the negative effects of the project, and provide offsetting benefits and opportunities to enhance communities, neighborhoods, and individuals potentially impacts;
3. The alternatives considered; and
4. The public involvement process itself.

Potential beneficial and adverse impacts, as identified in this DEIS, were examined in the following critical areas:

- Transportation, including roads and traffic, transit, pedestrian and bicycle access, and parking.
- Social Effects, including land use, community cohesion, socioeconomics, acquisitions and displacements, cultural resources, parklands, visual quality, and safety and security
- Environmental effects, including soils, water resources, wetlands, floodplains, navigable waterways, habitat and threatened and endangered species, and air quality.
- Short-term construction impacts.
- Indirect and cumulative impacts.

The evaluation summarizes the beneficial and potential adverse impacts for each build alternative considered, including efforts to solicit input from the public in considering the alternatives. In making determinations as to whether any build alternative will have “disproportionately high and adverse environmental effects” on minority and/or low-income populations, mitigation and enhancement measures that will be incorporated into the project, and all offsetting benefits to affected minority and/or low-income populations, may be taken into account, as well as design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas.

If adverse impacts of the project fall disproportionately on minority and/or low-income populations, additional mitigation measures beyond those already identified may be required. If strategies cannot be taken to adequately mitigate the identified impacts, then selection of an alternative with less adverse impacts may need to be considered.

6. Public and Agency Involvement

The VBTES project’s public involvement activities included a wealth of opportunities for and methods to encourage productive and meaningful dialogue with community members. The public involvement program provided numerous opportunities for the community to comment on the project to develop an awareness and understanding of the project by area residents, businesses, community-based organizations, and other stakeholders in the project area.

7. Environmental Justice Analysis

The build alternatives considered would improve transit access between the residential, commercial, and activity centers within the VBTES Corridor and the greater Hampton Roads metropolitan region. The alternatives traverse between three and six of the City’s Strategic Growth Areas (SGAs), areas designated through local land use planning for transit-oriented development. The SGA master plans call for sustainable development practices, integrating high quality well designed workforce housing with other uses to create higher density mixed-use developments with a neighborhood center, improved pedestrian and trail facilities, and a street and block structure created to accommodate development and mobility. Residents within the project study area would have direct access to the new, expedient transit service, linking neighborhoods and communities with area employment centers and recreational amenities. Project benefits to minority and/or low-income populations living in the area include more transportation choices, direct access to employment opportunities, and potential for job creation and affordable workforce housing through economic revitalization.

Construction of any build alternatives would represent a substantial long-term capital investment in transit service and facilities serving the project study area as well as increased span of service and frequency of service for fixed route bus service throughout the City. Increased transit access to employment and activity centers would benefit all area populations, regardless of socioeconomic status. However, potential long-term impacts to minority and low-income communities may differ by alternative as discussed in Chapters 3, 4, and 5 of this DEIS. The following discussion provides a comparison of potential impacts on minority and low-income communities from the implementation of the proposed build alternatives.

- Transportation – Improved transit service, including a more tightly integrated regional bus system from the build alternatives would result in improved mobility of minority and low-income populations.
- Land Use and Economic Development – The build alternatives have the potential to stimulate development and redevelopment and create additional jobs providing a community-wide benefit. Roadway improvements required to safely operate Alternatives 1B, 2, and 3 through the Thalia community would require the closure of Fir Avenue and Budding Avenue. These closures would change access patterns in the community and have the potential to increase traffic on Thalia Road and Southern Boulevard. The direct and indirect effect of these closures will be studied should Alternative 1B, 2, or 3 be selected as the LPA.
- Acquisitions and Displacements – Most of the potential acquisitions and displacements related to the build alternatives would occur in low income or minority block groups but would not require any residential displacements. All of the commercial acquisitions would occur in well established commercial areas and would not disproportionately impact low income or minority business owners or limit shopping opportunities for low income or minority populations. The residential displacement required for the LRT version of Alternative 3 would not occur in a low income or minority block group. Partial acquisitions are generally small areas and would occur throughout the VBTES Corridor and would not disproportionately impact low income or minority populations.
- Cultural Resources – Impacts to cultural resources have not been finalized. After the selection of a locally preferred alternative, final surveys and impact assessments will be completed.
- Parklands – No adverse impacts to parks would occur as a result of any of the build alternatives.
- Visual Quality – No adverse impacts to parks would occur as a result from any of the build alternatives.
- Safety and Security – No impacts to safety and security would occur as a result of the build alternatives.
- Noise and Vibration – Severe noise impacts may occur in minority or low-income communities without mitigation. Light rail alternatives 1A and 1B would have a severe impact (see DEIS Table 5.8-7) to three receptors in block groups with above average number of low income or minority households. Light rail Alternatives 2 and 3 would have a severe impact on four receptors in block groups identified as low income and minority. This is compared to five receptors with severe impacts in non-environmental justice areas for all four light rail alternatives. The BRT alternatives would have no severe noise impacts to any receptors. HRT will work with the affected households and business to lower the noise levels to below severe impact thresholds in all cases.

- Soils and Farmland – No adverse impacts to soils or farm lands would occur as a result of the build alternatives.
- Surface Water, Groundwater, and Water Quality – No disproportionate or adverse impacts would occur.
- Habitat and Wildlife – No disproportionate or adverse impacts would occur.
- Hazardous Regulated Materials– Construction of any of the transit alternatives may require the cleanup of known and unknown contaminated sites. No disproportionate or adverse impacts are anticipated.
- Energy – No disproportionate or adverse impact would occur.
- Air Quality – The build alternatives would have negligible impacts on air quality in the VBTES Corridor.

8. Conclusions

The environmental justice analysis indicates that there would be no disproportionately high or adverse impacts to minority and/or low-income communities with implementation of either build alternative. Any of the alternative alignments would serve many of the same neighborhoods, and therefore, the effects do not vary greatly between alternatives. No acquisitions requiring displacements and relocations are required, and no impact to access or mobility is expected since no driveways or building entrances will be permanently closed and access will be maintained. The proposed streetcar extension would enhance connectivity within the VBTES Corridor and to the regional transit network facilitating transit use for the transit-dependent neighborhood. The trips generated by the proposed alternatives are relatively low as compared to the total number of regional trips; therefore, any build alternative is unlikely to have a significant impact on regional air quality. Air Quality analysis near the streetcar stops forecasted to have the highest traffic volumes and worst level-of-service for any of the proposed build alternatives shows that no violations of federal carbon monoxide standards are expected.

Construction of any build alternative would result in several short-term impacts to adjacent communities. Construction plans will be developed during the Preliminary Engineering and Final Design phases of the project. In order to avoid lengthy impacts to adjacent residents and businesses, it is anticipated that a phased construction program would be developed. Roadway operations, parking, access to businesses, public utility services, pedestrian and bicycle facilities along with short-term impacts to air quality, noise, and vibration are anticipated to be the most substantial impacts experienced by the people and businesses located adjacent to or near the construction zones. However these impacts would be mitigated to the extent possible with construction phasing. Short-term construction effects on protected populations will be described in more detail in the Final EIS.

Appendix A – Study Area Census Block Groups

Census Tract	Block Group	Population Statistics				Income Statistics		Determination
		Total Population	White (non-Hispanic)	Minority Population	Minority Population Percentage	Total Population ¹	Population in Poverty ²	
044808	3	1,196	817	379	31.7	1,190	44.3	Low-Income, Not Minority
040600	2	2,374	619	1,755	73.9	2,374	85.6	Minority and Low-Income
041002	1	1,202	780	422	35.1	1,202	72.0	Low-Income, Not Minority
041004	2	650	232	418	64.3	650	60.6	Minority and Low-Income
041004	1	940	708	232	24.7	940	22.3	Neither Minority or Low-Income
041004	3	1,041	647	394	37.8	1,041	0.0	Minority, Not Low-Income
041002	2	841	650	191	22.7	841	84.0	Low-Income, Not Minority
046010	1	808	669	139	17.2	808	56.7	Low-Income, Not Minority
042202	3	850	720	130	15.3	846	32.5	Neither Minority or Low-Income
042400	2	1,195	795	400	33.5	1,195	64.7	Low-Income, Not Minority
044003	1	964	773	191	19.8	819	45.7	Low-Income, Not Minority
044004	1	1,253	964	289	23.1	1,238	47.8	Low-Income, Not Minority
042600	1	1,010	833	177	17.5	933	32.5	Low-Income, Not Minority
042600	2	1,478	865	613	41.5	1,478	27.0	Minority, Not Low-Income

042802	3	788	522	266	33.8	788	19.6	Neither Minority or Low-Income
044004	2	816	700	116	14.2	816	53.2	Low-Income, Not Minority
043800	2	808	772	36	4.5	808	39.6	Low-Income, Not Minority
044001	1	1,266	986	280	22.1	1,266	35.1	Low-Income, Not Minority
044600	4	1,625	1,515	110	6.8	1,625	29.1	Low-Income, Not Minority
044600	2	1,843	1,706	137	7.4	1,388	64.2	Low-Income, Not Minority
040600	3	1,387	719	668	48.2	1,387	38.1	Minority and Low-Income
045601	1	933	877	56	6.0	933	45.0	Low-Income, Not Minority
045603	1	706	440	266	37.7	706	65.0	Minority and Low-Income
044600	3	814	783	31	3.8	814	10.0	Neither Minority or Low-Income
044808	2	651	493	158	24.3	651	61.6	Low-Income, Not Minority
044807	2	2,449	1,289	1,160	47.4	2,444	86.0	Minority and Low-Income
044806	1	2,081	770	1,311	63.0	2,070	54.2	Minority and Low-Income
044806	2	936	572	364	38.9	936	1.1	Minority and Low-Income
044806	5							
044807	3	1,726	1,003	723	41.9	1,726	26.4	Minority, Not Low-Income
044808	1	2,139	1,448	691	32.3	2,139	34.6	Low-Income, Not Minority

045407	4	866	550	316	36.5	866	54.1	Minority and Low-Income
046009	1	1,055	935	120	11.4	1,055	31.2	Neither Minority or Low-Income
045603	2	983	582	401	40.8	983	0.0	Minority, Not Low-Income
045604	3	2,286	1,486	800	35.0	2,283	24.1	Neither Minority or Low-Income
042202	2	1,754	1,536	218	12.4	1,713	22.1	Neither Minority or Low-Income
045604	2	2,552	1,373	1,179	46.2	2,431	21.8	Minority, Not Low-Income
045801	3	1,226	621	605	49.3	1,226	32.4	Minority and Low-Income
044200	1	1,784	1,128	656	36.8	1,784	39.3	Minority and Low-Income
044003	3	1,401	1,293	108	7.7	1,401	21.6	Neither Minority or Low-Income
045604	1	1,497	548	949	63.4	1,497	55.0	Minority and Low-Income
045407	1	1,334	1,066	268	20.1	1,334	56.6	Low-Income, Not Minority
044806	3	741	480	261	35.2	741	42.3	Low-Income, Not Minority
045601	2	1,862	1,377	485	26.0	1,862	50.1	Low-Income, Not Minority
045801	1	2,205	1,651	554	25.1	2,087	47.6	Low-Income, Not Minority
045000	1	1,298	712	586	45.1	97	1.1	Minority and Low-Income
044001	2	1,984	1,467	517	26.1	1,984	36.0	Low-Income, Not Minority

044003	4	874	620	254	29.1	874	57.4	Low-Income, Not Minority
046005	1	774	519	255	32.9	774	1.1	Low-Income, Not Minority
046009	3	1,041	797	244	23.4	1,041	39.7	Low-Income, Not Minority
046009	2	1,481	878	603	40.7	1,478	42.5	Minority and Low-Income
044001	4	1,209	895	314	26.0	1,209	8.0	Neither Minority or Low-Income
044805	1	1,187	698	489	41.2	1,187	41.8	Minority and Low-Income
044805	2	2,090	1,317	773	37.0	2,090	13.0	Minority, Not Low-Income
044805	3							
041003	3	725	595	130	17.9	725	60.0	Low-Income, Not Minority
041003	4	641	496	145	22.6	641	27.1	Neither Minority or Low-Income
042400	4	1,299	1,140	159	12.2	1,299	31.2	Neither Minority or Low-Income
042400	3	1,302	889	413	31.7	1,205	1.1	Low-Income, Not Minority
042802	1	1,951	635	1,316	67.5	1,941	96.4	Minority and Low-Income
042802	2	1,810	1,105	705	39.0	1,810	13.4	Minority, Not Low-Income
042801	2	989	694	295	29.8	989	34.7	Neither Minority or Low-Income
042801	1	1,325	806	519	39.2	1,314	45.6	Minority and Low-Income

044001	3	1,076	694	382	35.5	1,076	18.1	Minority, Not Low-Income
044200	4	1,136	405	731	64.3	1,129	67.2	Minority and Low-Income
044807	4	781	675	106	13.6	781	11.3	Neither Minority or Low-Income
046010	2	2,324	1,382	942	40.5	2,320	57.6	Minority and Low-Income
044200	2	2,511	1,014	1,497	59.6	2,405	1.4	Minority and Low-Income
044402	3	1,380	1,177	203	14.7	1,380	17.3	Neither Minority or Low-Income
044807	1	806	684	122	15.1	806	46.0	Low-Income, Not Minority
044200	3	1,156	986	170	14.7	1,156	30.0	Low-Income, Not Minority

¹ The ACS is a revolving sample survey of the population intended to provide information more current information on population trends and conditions. As estimate data, it is necessary to establish a base population estimate, which is different than the 100% count of the population conducted by the decennial Census. Therefore, the reported Total Population under the 2007-2011 ACS 5-Year Estimate column will be different than the 100% count total.

² The estimated number of persons in poverty reflects the number of individuals identified as being at or below 150% of the Federal Poverty Guidelines, according to the income tables provided by the U.S. Department of Health and Human Services.